7th Public Meeting

For

Bull Creek Phased TMDL Development

Martha Chapman

DEQ Southwest Regional Office

Agenda

TMDL Basics & Background on Bull Creek – Martha

Summary of Changes for Consolidated Report – Will

Timeline - Liz

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Overview of TMDL Process

Department of Environmental Quality

1. Conducts water quality sampling
2. Assesses the data by comparing it to water quality standards
3. Problem (**Impaired**) waters are listed in an EPA report called the 303(d) Total Maximum Daily Load (**TMDL**) List

TMDLs are required by State and Federal Law

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TMDLs are Required by Law

- Federal 1972 Clean Water Act requires:
  - Water Quality Monitoring
  - Periodic Assessment and Impaired Waters Listing
  - Develop TMDLs for Impaired Waters
- Virginia's 1997 Water Quality Monitoring Information and Restoration Act (WQMIRA) requires
  - TMDLs for Impaired Waters
  - An Implementation Plan

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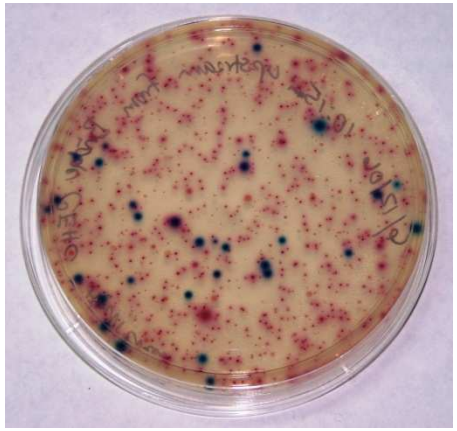
What are Water Quality Standards?

- **Numeric** or **Narrative** Limits designed to protect designated uses
  - Recreational use: measured by the number of colony forming units of bacteria in the water
  - Aquatic life use: measured by the numbers and varieties of aquatic organisms that live in our streams



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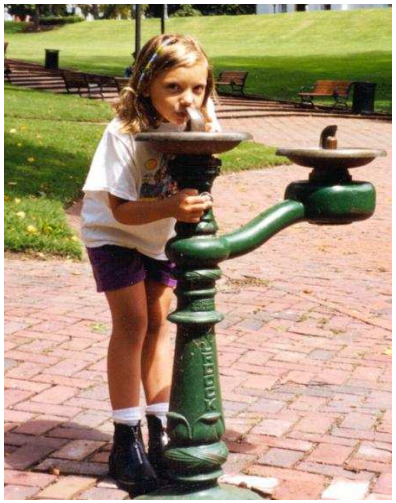
Designated Uses

Virginia's designated uses include:

Wildlife
Aquatic Life
Recreation
Fish Consumption
Shellfish
Public Water Supply



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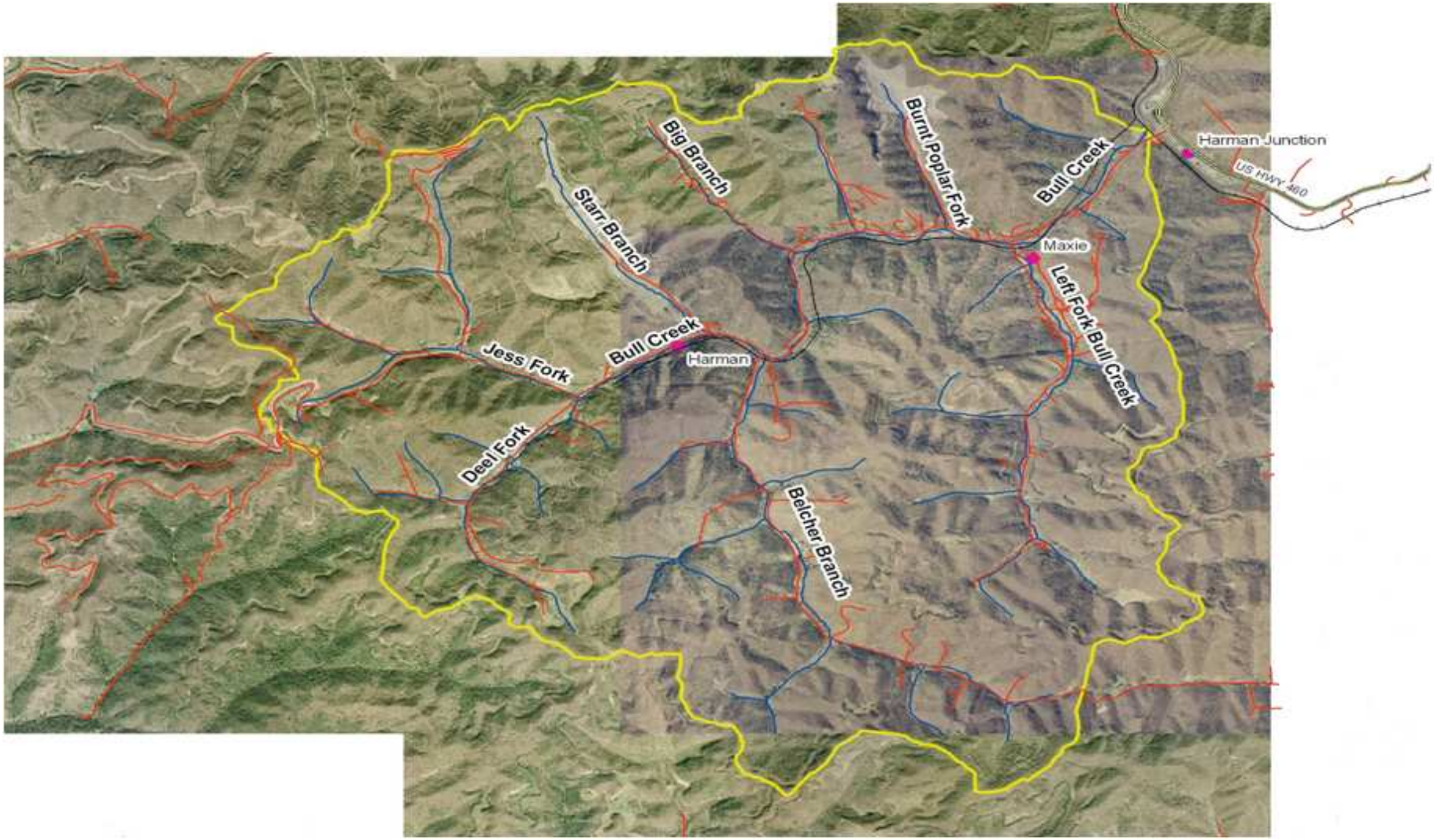
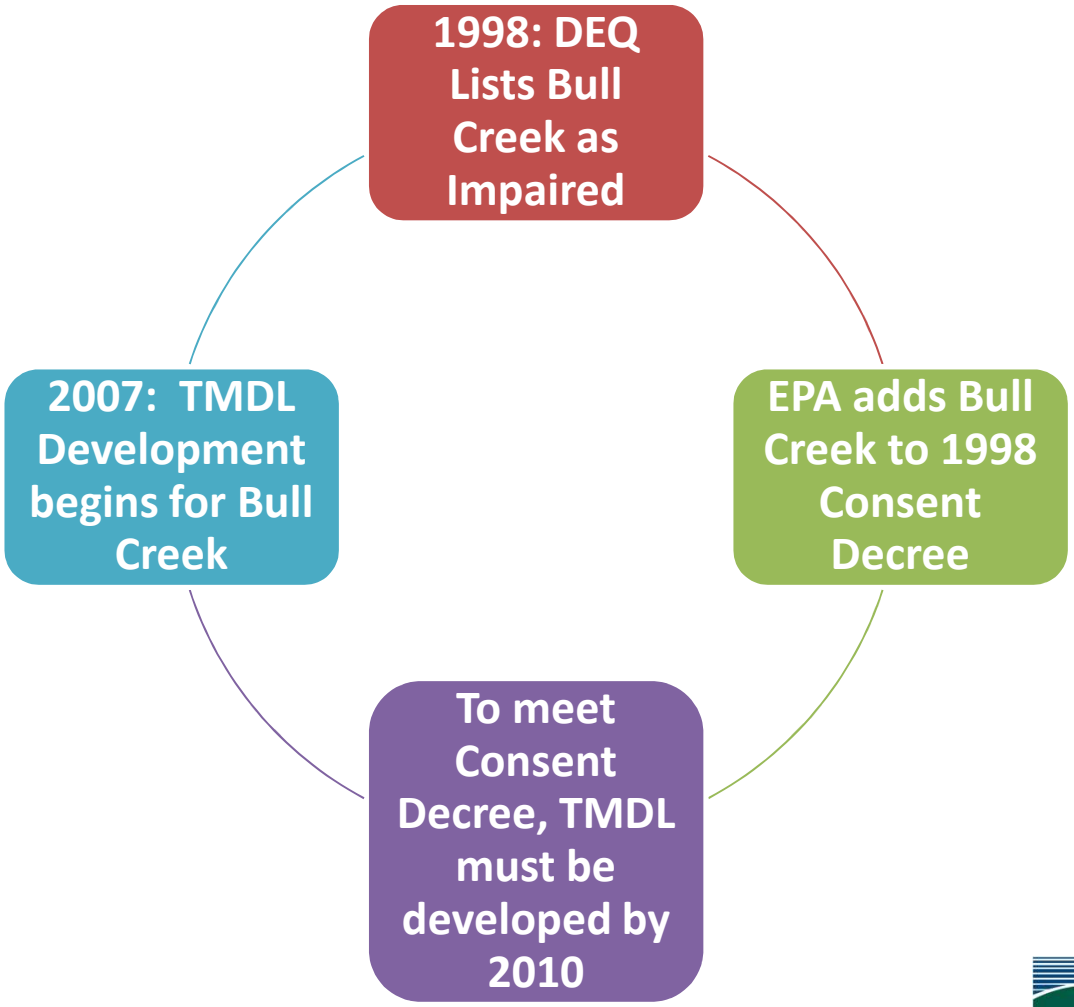
Bull Creek Watershed



Pre-TMDL Development



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History of Bull Creek TMDL Development 1

- First public meeting held on October 4, 2007 in Maxie.
  - Uncertainties and differences in interpretation limited stakeholders' confidence in the first draft of the TMDL
  - Negotiations lead to adopting a phased approach

- Second public meeting held on March 20, 2008 in Maxie.
- Third public meeting held on September 23, 2008 in Maxie.

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Specific Concerns about Sediment

- Estimated load from control ponds at active mines during storm events
- Estimated load from ancillary (not controlled by ponds) active mining areas
- Contributions from abandoned mine lands
- Contributions from reclaimed and released areas

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Specific Concerns about Total Dissolved Solids

- Concerns focused on the distribution of loads between sources.

- Several discharges from abandoned underground mine workings might have been under-represented in the model

- Potential impacts of straight pipes

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History of Bull Creek TMDL Development 2

- Significant changes were made to the TMDL document and a third public meeting was held on January 14, 2010 in Grundy.

- Additional refinements were made and the Phase 1 TMDL document was completed in time for the May 1, 2010 CD deadline and approved by EPA in April 2011

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Phased TMDL Approach

- The Phase I TMDL was developed with the best available data to determine pollutant load reductions.
- Additional monitoring is recommended to resolve any uncertainties.
- After monitoring is completed, a revised document will be developed two years after the date EPA approved the Phase I TMDL.

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Amendments

- A public meeting was held on March 3, 2011 in Big Stone Gap to present amended pollutant loads and wasteload allocations.
- Allocation tables presented in the 2011 version of the Phase I TMDL supersede previous versions.
- New or modified discharge permits for coal mining operations in Bull Creek will be issued consistent with these WLAs throughout the second phase of development.

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Monitoring Plan

- A monitoring plan was developed based on questions regarding data needs (Slides 11 & 12).
- A public meeting was held on July 26, 2011 to present a preliminary monitoring plan.
- For Bull Creek, the plan focused on determining:
  - sediment loads during storm events;
  - annual contributions of TDS from abandoned underground mine works;
  - What percentage of total TDS waste load comes from background, current mining activity, groundwater;
  - How much do straight pipes contribute to aquatic life impairments

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Water Quality Studies

- A public meeting was held on April 25, 2013 in Abingdon to present the findings of additional monitoring.

- Monitoring studies informed the adjustments made to the models, which then provided the basis for the Phase 2 TMDL allocations

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Phase 2 TMDL

- In October 2013, the Phase 2 document was completed as an extension appended to the Phase 1 document

- A public meeting was held on October 24, 2013 in Norton.

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EPA Comments

- When submitted for review, EPA commented that because there were changes to the TMDL allocations it needed to exist as a single document

- The document presented today is that document that combines Phase 1 background with Phase 2 modeling and TMDL allocations

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Revisions to Phase I & II Model Development Chapters

- EPA asked for a single report
- Model development was phased:
  - Phase I development
  - Phase II = adjustments to Phase I development
- Model development chapters (Chapters 5 – Sediment & Chapter 6 – TDS)
  - Phase I development
  - Phase II model adjustments

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Phase II Model Adjustments

*Modeling period, land use, weather, and other conditions all remained the same

Sediment model changes:

- Construction stormwater permitted loads were added
  - TSS concentration = 60 mg/L
- Active mining and reclaimed areas modeled at 70 mg/L
  - *Previously modeled with a sediment pond efficiency of 85%*
- Recalibrated hydrologic model
  - Sediment model was not recalibrated as the sediment pond efficiencies were removed from the model

TDS model changes:

- Flow volumes for measured for Phase II model adjustments were 2.3 times greater than Phase I
  - Flows and loads were therefore increased by 2.3 times
  - Did not warrant re-calibration
  - Concentrations were not altered
- Active mining and reclaimed areas were re-modeled
  - *Original allocations overestimated the load due to groundwater*
  - Phase II allocations were adjusted to only represent TDS loads through permitted ponds

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Phase II TMDL Allocations – Sediment

	WLA t/yr	LA t/yr	MOS t/yr	TMDL t/yr
Bull Creek	**58.89**	**4,135.15**	**466.40**	**4,660.44**
Gas Well Construction Permits	3.32			
Surface Coal Mining Transient Permits				
1101701	0.77			
1101736	1.95			
1101903	0.04			
1101979	1.03			
1200129	0.01			
1200281	0.10			
1200343	0.09			
1200589	0.07			
1201678	0.04			
1201922	0.19			
1201940	0.09			
1601788	4.54			
Future Growth	46.64			

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Phase II TMDL Allocation Scenario

- 42.6 % reductions from the following sediment sources:
  - Row Crop – High Till
  - Pasture
  - Barren Land (construction + oil/gas well)
  - Low, Medium, and High density residential
  - Abandoned mine lands
  - Released mine lands
- Overall 32.64% reduction in load
  - Majority comes from Abandoned Mine Land reductions

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Phase II TMDL Allocations – TDS (kg/yr)

WLA		LA	MOS	TMDL
44,902		**2,723,011**	**Implicit**	**2,767,913**
Mining Permit Numbers	**Permit WLAs**			
1101701	3,878			
1101736	9,833			
1101903	221			
1101979	5,179			
1200129	69			
1200281	494			
1200343	435			
1201678	213			
1201922	972			
1201940	459			
1601788	22,811			
1200589	338			

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Phase II TMDL Allocation Scenario

- 100% reductions from the following TDS sources:
  - Abandoned mine land
  - Pre-law mine drainage
  - Residential (straight pipes and failing septic)
- 39% reductions from non-background groundwater
  - Includes abandoned underground mine workings, drainage from valley fill, and other human influenced groundwater flow
- Overall 33% reduction in load

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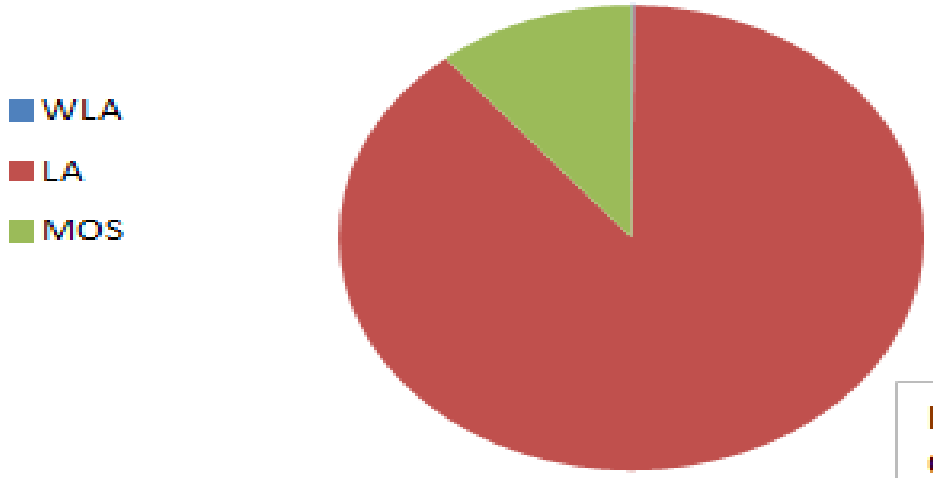
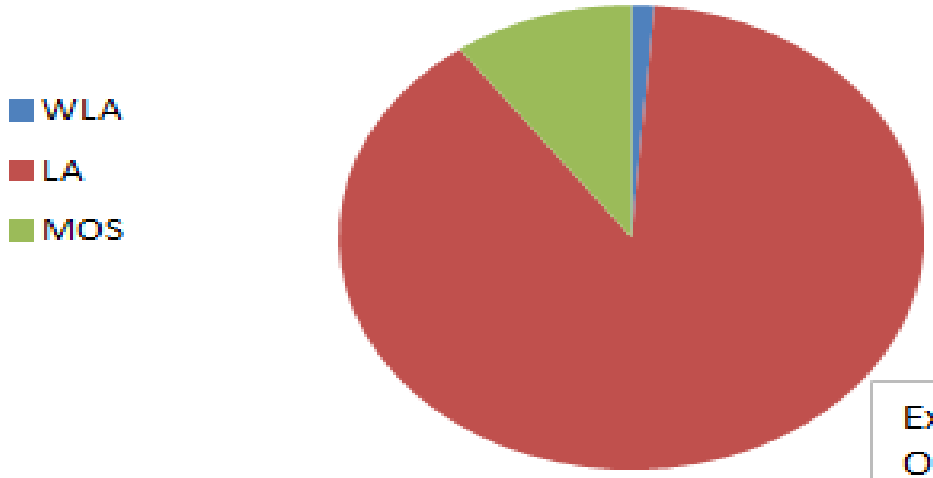
Phase I - Sediment TMDL = 2759.7 tons/yr



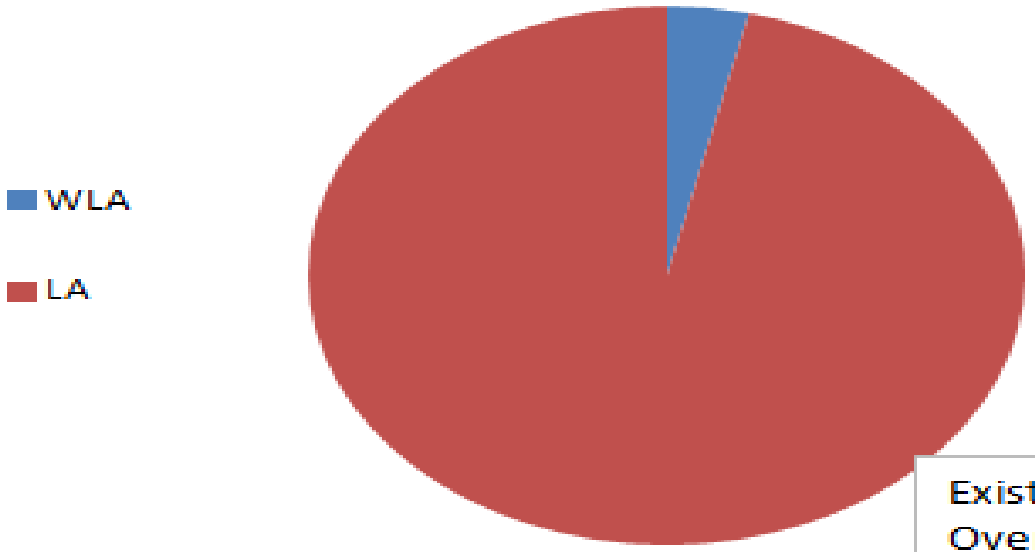
Existing Loads = 6038.3 tons/yr
Overall reductions = 54.3%

Phase II - Sediment TMDL = 4660.44 tons/yr



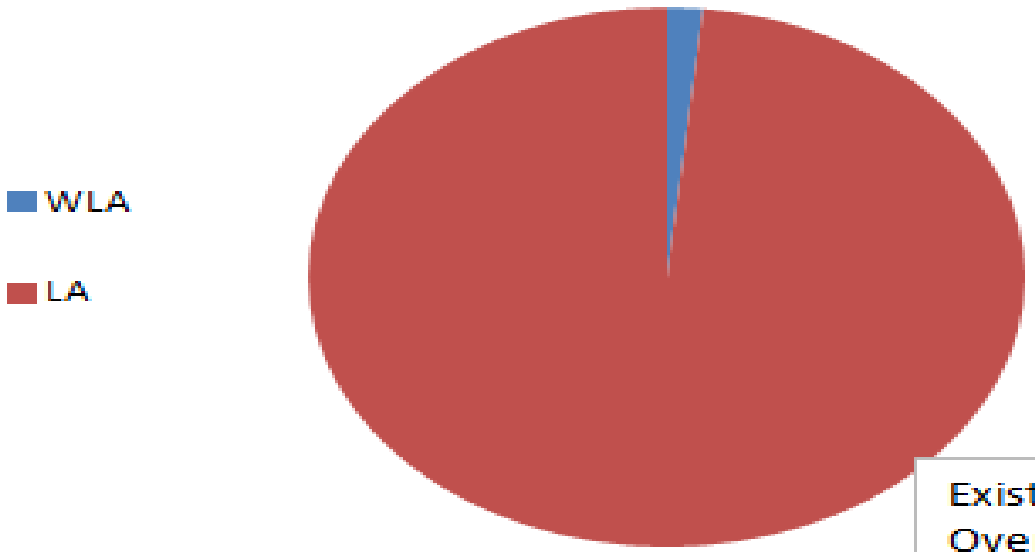
Existing Loads = 6919.13 tons/yr
Overall reductions = 32.6%

Phase I - TDS TMDL = 3,157,983 kg/yr



Existing Loads = 6,022,048 kg/yr
Overall reductions = 67.1%

Phase II - TDS TMDL = 2,767,913 kg/yr



Existing Loads = 8,406,629 kg/yr
Overall reductions = 47.6%

Where to find the document?

http://www.deq.virginia.gov/portals/0/DEQ/Water/TMDL/drftmdls/draft_BullCreekFinalPhase.pdf

or

http://www.deq.virginia.gov/programs/water/waterqualityinformationtmdls/tmdl/tmdldevelopment/drafttmdlreports.aspx

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Questions?

The public comment period ends on September 11, 2015.

Questions and comments should be directed to:

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